

Appl. No. 09/992,110
Amdt. dated March 13, 2006
Reply to Office Action of December 12, 2005

REMARKS/ARGUMENTS

Pursuant to 37 C.F.R. § 1.111, reconsideration of the present application in view of the following remarks is respectfully requested. Claims 1 - 27 are presented for consideration.

Applicants appreciate the acknowledgement of allowable subject matter in claims 1 - 15.

1. Regarding Examiner's rejection for anticipation by or for obviousness by Milding

By way of the Office Action mailed December 12, 2005, claims 16 – 27 were rejected under 35 U.S.C. § 102(b) as alleged being anticipated by or, in the alternative, under U.S.C. § 103(a) as allegedly being obvious to one of ordinary skill in the art at the time the invention was made and thus unpatentable over PCT Application Publication WO 96/06222 to Milding et al. This rejection is respectfully **traversed**.

Milding et al. discloses a nonwoven material produced by hydroentangling a fiber web including recycled fibers that are mechanically freed from nonwoven waste (abstract). Milding et al. teaches that the recycled fibers can be recycled by mechanical shredding of the waste, whereby the material is cut into small bits that, with the help of spiked rollers, are torn up so that the fibers are freed (page 3, lines 18-21).

Milding et al. does not teach or suggest that the mechanically freed fibers may be recycled by suspending discrete pieces of bonded fibrous materials in a liquid and applying mechanical work to the liquid suspension to generate hydraulic pressure and mechanical shear stress conditions sufficient to hydraulically fragment the bonded fibrous materials into fibers and fiber-like components, as taught by claim 1 of the present invention. As claim 16 is dependent upon claim 1 and thus contains all of the limitations of claim 1, Milding et al. does not teach or suggest all of the limitations of claim 16. Therefore, as Milding et al., Applicants respectfully submit that the rejection of claim 16 under 35 U.S.C. § 102(b), or alternately under 35 U.S.C. § 103(a), is improper and should be withdrawn.

With regard to claims 17 – 27 of the present invention, Milding et al. does not teach or suggest recycled synthetic fibers and fiber-like materials having at least one thread

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element composed of synthetic material including at least one irregular distortion generated by hydraulic fracture of the thread element to separate it from a bonded fibrous material while the bonded fibrous material is suspended in a liquid as set forth in claim 17. The Office Action of December 12, 2005 admits that Milding et al. fails to teach an irregular distortion formed by hydraulic fracture, but presumes that such a distortion would be present after the mechanical separation taught in Milding et al. The Applicants respectfully traverse this presumption.

The unique nature of the irregular distortions of the fibers resulting from the hydraulic fracturing of the synthetic nonwoven materials by the present invention help in formation of a nonwoven web, as well as in the subsequent hydraulic entangling of that web to form a nonwoven composite structure. Such recycled fibers have a greater utility than 100 percent virgin fibers in producing a hydroentangled fabric due to their unique shape and greater surface area (page 24, line 11 – page 25, line 2).

FIGS. 3 -14, along with their discussion on pages 18 – 22, visually show the unique nature of the irregular deformations formed by hydraulic fracture as compared to virgin synthetic fibers. The hydraulically fractured recycled synthetic fiber of FIG. 3 can be compared to the conventional polypropylene staple fiber of FIG. 4, as discussed on page 19, lines 14 – 35. The exemplary recycled synthetic fiber of FIG. 8 can similarly be compared to the conventional polypropylene staple fiber of FIG. 9, as discussed on page 20, line 26 to page 21, line 2. These figures clearly show the physical difference between the hydraulically fractured recycled synthetic fibers of the present invention and conventional staple fibers.

Additionally, the fact that the synthetic fibers are being separated in a water/liquid bath provides for a separation process and a resultant recycled fiber that the process of Milding et al. cannot provide. In the present invention, traditional tearing, shredding and slicing operations may be used to reduce bonded fibrous webs into pieces having a size adapted for suspension in a liquid (page 13, line 35 – page 14, line 28). The liquid suspension is then exposed to conditions of hydraulic pressure, shear stress, and/or cavitation forces sufficient to fragment, rupture, burst or disintegrate pieces of bonded fibrous material into synthetic fibers or fiber-like materials having the desired irregular deformations (page 14, line 29 – page 15, line 24; page 18, lines 11 - 24). The conditions

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of such a process are more aggressive and stringent than those found in conventional pulping operations (page 14, lines 34 – page 15, line 24), including the process of Milding et al. Such conventional processes, as discussed in the background of the specification, produce incomplete fiberization of bonded nonwoven webs so that synthetic recycled fibers are produced along with undesirable bits of fabric or "flocks" (page 2, line 3 - page 3, line 20). If the amount of mechanical work as used in the present invention was used to attempt to produce more recycled synthetic fibers in Milding et al., the amount of energy produced by such increased work would likely melt the thermoplastic material of Milding et al. into unusable clumps of polymer (page 3, lines 15 – 20). In contrast, the breaking up of the fibers in the liquid suspension of the present invention allows for such increase work without the detrimental effect on the synthetic fibers as the extra energy is absorbed by the liquid. With the present invention more mechanical work can be done on the synthetic fibrous material in the liquid suspension and recycled synthetic fibers can be produced without undesirable flocks (page 15, lines 11 - 24).

In summary, compared to traditional methods of tearing of Milding et al., the hydraulic fracturing of the present invention provides more recycled synthetic fibers without undesirable flocks. Additionally, the synthetic fibers are separated from each other without heat degradation of the synthetic fibers caused by the mechanical work of the separation, as would likely occur with the traditional mechanical separation process of Milding et al. The resultant recycled synthetic fibers have irregular distortions that are clearly evident in kinks or bends in such fibers along with partial flattening of the fibers, which give the recycled fiber overall increased surface area. These irregular distortions provide such recycled synthetic fibers with greater utility than 100 percent virgin fibers with regard to formation of hydraulically entangled nonwoven fabrics comprising such recycled synthetic fibers. Therefore, the irregular distortions produced by hydraulic fracture of the present invention cannot be presumed to be present in the process of Milding et al.

Thus, as Milding et al. does not teach or suggest all the limitations of independent claim 17 or the claims that depend therefrom, Milding et al. fails to establish a *prima facie* case of anticipation or obviousness. Accordingly, the rejection of claims 17 – 27 under 35 U.S.C. § 102(b), or alternately under 35 U.S.C. § 103(a), is not believed to be warranted and should be withdrawn.

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2. Provisional rejection of claims for double patenting

By way of the Office Action mailed December 11, 2003, claims 1 – 27 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1 – 20 of copending Application No. 10/012,768 and claims 1 – 20 of copending Application No. 10/012,766.

An appropriate terminal disclaimer will be provided, if necessary, upon the final determination of all allowable subject matter in the present application. It is respectfully requested that the requirement for such terminal disclaimer be suspended until such time as allowable subject matter is determined.

All outstanding matters raised in the Office Action having been addressed, it is respectfully submitted that all of the present claims are in form for allowance.

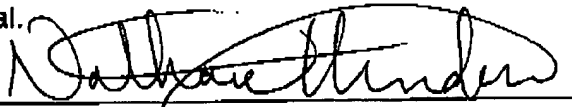
Please charge any prosecution fees which are due to Kimberly-Clark Worldwide, Inc. deposit account number 11-0875.

The undersigned may be reached at: (770) 587-8640.

Respectfully submitted,

Palacio et al.

By


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CERTIFICATE OF FACSIMILE TRANSMISSION

I, Nathan Hendon, hereby certify that on March 13, 2006, this document is being sent by facsimile to the United States Patent and Trademark Office, central facsimile number for all patent application related correspondence, at 571-273-8300.

By


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